DESIGN-BUILD
PAVEMENT WARRANTIES

POLICY

The Design-Builder shall be responsible for the pavement performance and warranty work for a period of five years following final acceptance of the project. The parameters to be used to evaluate pavement performance include: pavement ride quality, pavement friction, and pavement surface condition. These parameters will be measured and evaluated by the WSDOT HQ Materials – Pavements Division on an as needed basis (requested by the WSDOT Project Office) during the warranty period. The following outlines the threshold criteria for the pavement warranty at the end of the five-year warranty period

Hot-Mix Asphalt Pavements

- Ride quality (IRI): < 90 inches per mile
- Friction: > 40
- Pavement surface condition
  - Rutting: < ¼ inch average, no individual 100 lane-foot section greater than 3/8 inch.
  - Alligator cracking: < ¼ inch in width and < 0.1 percent of total pavement surface area
  - Longitudinal cracking: < ¼ inch in width and < 1 percent of the project length
  - Transverse cracking: < ¼ inch in width and < 1 crack per 2000 lane-feet

Portland Cement Concrete Pavements

- Ride quality (IRI): < 90 inches per mile
- Friction: < 40
- Pavement surface condition
  - Wear: < ⅛ inch
  - Cracking: one crack per panel and < 0.1 percent of panels
  - Faulting: none
  - Joint seal damage: < 2 percent of joint length per lane mile

DISCUSSION

The use of a pavement performance warranty provides WSDOT with a measure for evaluating the Design-Builder's construction quality. Though the above distress do not constitute all of the measures used to evaluate pavement performance, measurement of these distress are a good indication of overall pavement performance.

A draw back with the pavement warranty is that bonding agents have difficulty in providing bonding longer than five years. If a pavement is not placed properly, more than likely it will be noticeable within this five-year period; however, a five-year warranty does not necessarily imply a long lived pavement life.

DESIGN-BUILD
PAVEMENT TYPE SELECTION

POLICY

Pavement type selection will be in accordance with the *WSDOT Pavement Type Selection Protocol*.

DISCUSSION

Different pavement types offer different levels of service to the traveling public. Pavement type, for example, affects maintenance repair cycles, future rehabilitation cycles, and the number of days for roadway closure due to repair and rehabilitation.

WSDOT makes the pavement type selection determination. As the uninterested party when it comes to placement of a bituminous surface treatment, a hot mix asphalt pavement, or concrete pavement, the "owner's right to choose" is critical in obtaining the anticipated pavement performance life. The analysis for pavement type selection is conducted by the Region offices, in accordance with the *WSDOT Pavement Type Selection Protocol*, and is reviewed by the Pavement Type Selection Committee to ensure quality and policy compliance.

DESIGN-BUILD
DOWEL BAR TYPE SELECTION

POLICY

Stainless steel (clad, or hollow) dowel bars shall be used at all transverse joints in portland cement concrete pavements.

DISCUSSION

Through coordination with the state DOT's of California and Minnesota, WSDOT has determined that the use of epoxy coated steel dowel bars in new construction of concrete pavements does not provide the desired pavement performance life of 50 or more years. Minnesota DOT has conducted a study of in-service concrete pavements that were constructed with epoxy coated steel dowel bars at transverse joints and has determined that significant corrosion has occurred in the dowel bars. The result of this study has indicated that the corrosion of epoxy coated dowel bars results in a pavement life of less than 20 years (dowel bar corrosion leads to joint deterioration which requires complete replacement of the concrete pavement). California DOT is currently conducting a study on the corrosion rates of a variety of different dowel bars (epoxy coated, stainless steel and stainless steel clad) and is finding that the epoxy coated bars are failing the corrosion testing, while the stainless steel bars are experiencing no corrosion. Therefore, WSDOT is recommending the use of stainless steel clad dowel bars on all newly constructed concrete pavements (modifications to the standard plan will hopefully be completed by the end of the year). These dowel bars are to be placed as designated in Standard Plan A-1.

Until recently there has only been one supplier of stainless steel clad dowel bars (Stelax). Stelax, since the bars are being shipped from Wales, has had delivery delays. However, Stelax is in the process of selecting a processing plant in the United States, which will greatly improve product delivery. In addition, a second company (SMI) is also trying to compete in the stainless steel clad market, but to date has had some manufacturing difficulties.

DESIGN-BUILD
QUALITY OF DOWEL BAR INSTALLATION

POLICY

Dowel bar alignment shall be validated through concrete cores (if dowel bar baskets are used) or with the MIT Scan (if a dowel bar inserter is used). Dowel bar alignment tolerances are listed in Standard Specification 5-05.3(10). In addition, dowel bars shall be free of surface irregularities or any signs of corrosion.

DISCUSSION

To obtain long-lived concrete pavements (50+ years) that exhibit minimal future rehabilitation, dowel bar alignment must be held to tight tolerances. An improperly placed dowel bar will increase the pavement stress, which leads to cracking and eventual failure of the transverse joint or cement concrete panel. Improperly placed dowel bars have resulted in cement concrete pavement failure within the first five years.

Stainless steel clad dowel bars shall be free of all defects, including the condition of the coating. A bar that is corroded prior to placement will continue to corrode and not provide the desired pavement performance life.